Mathematical Girls - Fermat's Last Theorem

C01

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Forgotten Scans

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Eastern Atelier

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fos-scans.com
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Memories are always a vague labyrinth.
A faintly shaking voice,
Chestnut hair.
What I clearly remember is a sparkling galaxy with
A warm hand,
I will start telling the story from there.

My high school days
From an autumn day together with those girls—
数学ガール1
Mathematical Girls
フェルマーの最終定理
第1話
原作 結城浩
作画 春日旬

ONII-CHAN, WELCOME HOME!!
YOU ENTERED MY ROOM ON YOUR OWN AGAIN...
WHEN DID YOU COME?
P WP
AFTER LUNCH~
...WHAT?
HOHO
PCI
HEY, LOOK AT THIS, ONII-CHAN!

A BOOK ABOUT STARS!
VEGA, ALTAIR, DENEB...
AND THIS ONE IS PROCYON...
IT'S REALLY BEAUTIFUL.
fascinated
AH...
THAT'S RIGHT.
Leaf
Ba-dump
UM...
RATHER THAN PICTURES OF STARS, IT'S NO MORE THAN AN ASSEMBLY OF LUMINOUS POINTS
SOMETIMES THEY HAVE REGULAR PATTERNS SOMETIMES NOT...

O... ONII-CHAN, WHICH ARE YOU?
EH.
OUT OF THOSE WHO RAISE THEIR EYES TO WATCH THE SKY AT NIGHT,
THEY SAY THAT THERE ARE TWO TYPES OF PEOPLE: "THOSE WHO COUNT THE STARS" AND "THOSE WHO DRAW THE CONSTELLATIONS".
OH! I...
I SEE!
I GUESS I WOULD BE THE TYPE TO COUNT
BA-DUMP
Haaahh
BA-DUMP
BA-DUMP

I ENJOYED MATHS WITH FRIENDS FOR A WHILE AFTER CLASS.
THAT'S NOT IT.
WHICH REMINDS ME! EVEN THOUGH IT'S SATURDAY TODAY, YOU WERE LATE
IS STUDYING THAT DIFFICULT IN HIGH SCHOOL?
I NEITHER LIKE IT NOR HATE IT!
POI
JUMP
AH, IS THAT SO..
HM!
HOW ABOUT YURI, DO YOU DISLIKE MATHS?
WE ALSO STUDY MATHS IN THE LIBRARY AFTER LESSONS ARE OVER.
YEAH.
HOMEWORK?
ONII-CHAN LIKES IT, RIGHT?

ROLL
COIL
SOMETIMES WE DRAW DIAGRAMS
..I WONDER IF THAT'S FUN..
NO, I FINISH THE HOMEWORK IN THE FREE PERIOD
AFTER SCHOOL IS FOR PLAYING AROUND WITH NUMERICAL EXPRESSIONS
EH!
EVEN THOUGH YOU WRITE IN THE NOTEBOOK YOURSELF?
AND SOMETIMES I DISCOVER BEAUTIFUL THINGS.
Fidget
Fidget
YEAH, STRANGELY ENOUGH, I DISCOVER THEM.

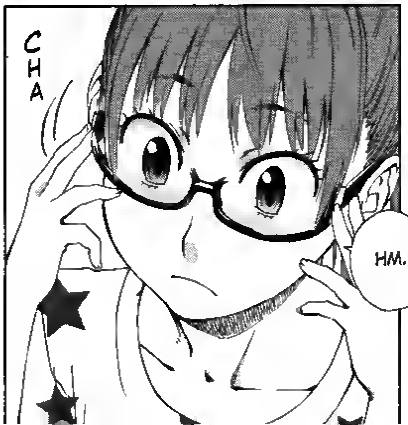
ONII-CHAN,
...YURI, TOO,
WANTS TO BE TAUGHT THINGS LIKE THAT, NYAA.
ALL RIGHT, WHY DON'T WE TRY IT NOW?
BOOOING
HOORAY!
OUCH!?

MAYBE IT'S GROWING PAINS?
HEEE

WHAT'S WRONG?!
URGH. IT'S NOTHING.
MY LEG HURTS EVERY ONCE IN A WHILE.

ANYWAY, NOW WHAT?!
Thud

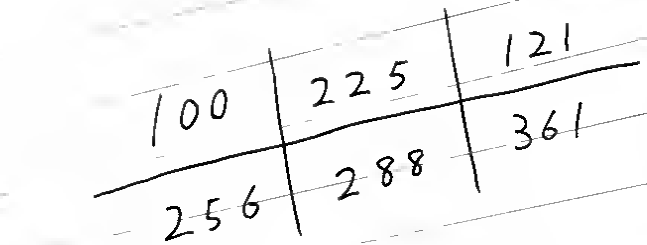
THUD
RIGHT. LOOK AT THIS.


CHA
HM.

101
321
681
991
450
811
Which one is the odd one out?
Ba-dump
WHAT BEAUTIFUL HAND-WRITING.
AS IF IT WAS WRITTEN BY A GIRL.
swish
swish
LIBRARY

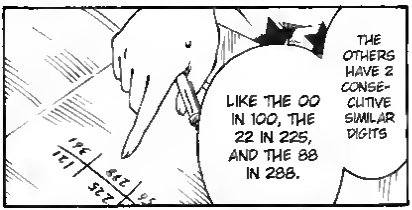
THE OUTCAST GAME.
450
ONLY 450 DOESN'T END WITH 1, WHILST ALL THE OTHERS DO
CORRECT. YOUR REASONING?

51 11
61 31
71 41
NOW THEN, WHAT ABOUT THIS?
51
IT'S THE ONLY ONE THAT'S NOT A PRIME NUMBER.
THEN,
HOW ABOUT THIS?


100
225
121
256
288
361

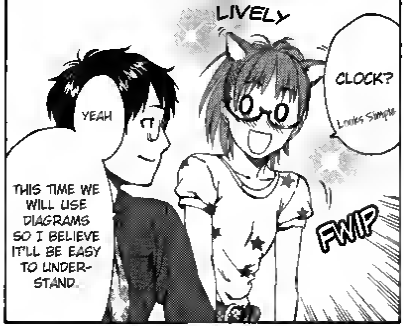
HM... MM
FOR THIS QUIZ, 256 IS THE ODD ONE OUT.
MAYBE?

THE ODD ONE OUT IS 288.
HOW COME?!

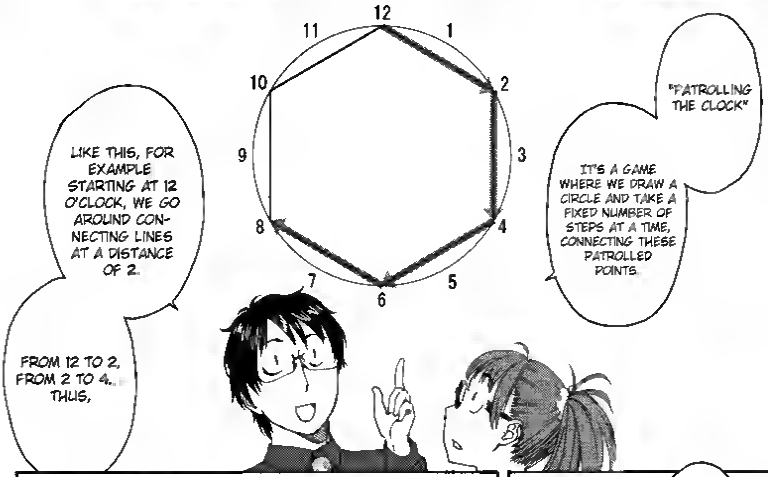

LIKE THE 00 IN 100, THE 22 IN 225, AND THE 88 IN 288.
THE OTHERS HAVE 2 CONSECUTIVE SIMILAR DIGITS

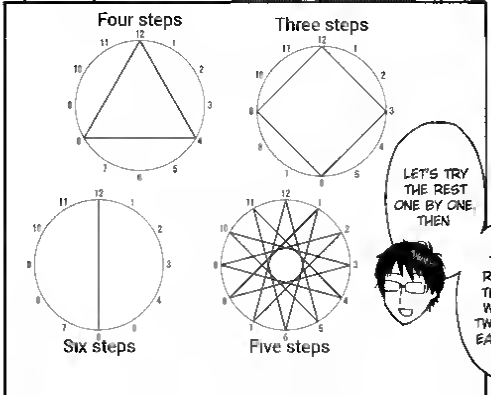
UUU~
BUT 121 DOESN'T HAVE THIS SEQUENCE, AND NEITHER DOES 361. SO WHAT ARE YOU GOING TO DO?

...IT WOULD BE STRANGE IF I REALISED SOMETHING LIKE THAT...
100 = 10²
225 = 15²
121 = 11²
288 IS THE ONLY ONE THAT'S NOT A SQUARE NUMBER.
THAT'S TO SAY, 288 IS THE ONLY ONE THAT CAN'T BE WRITTEN IN THE FORM OF AN INTEGER TO THE POWER 2
256 = 16²
288 = 17² − 1
361 = 19²
WELL THEN, HOW ABOUT THIS QUIZ?
SFX: FED UP
239 | 251 | 257
263 | 271 | 283
IT TOOK YOUR ONII-CHAN A WHOLE DAY TO SOLVE IT...
ZOD
ZOD
I'M MORE SURPRISED THAT YOU'RE ABLE TO SPEND A WHOLE DAY THINKING!!
ENOUGH WITH THE QUIZZES ALREADY. WHERE DID THE STORY ABOUT "BEAUTIFUL DISCOVERIES" GO?!!
AHHHHHH


LIVELY
CLOCK?
Looks Simple
YEAH
THIS TIME WE WILL USE DIAGRAMS SO I BELIEVE IT'LL BE EASY TO UNDERSTAND.
FWIP

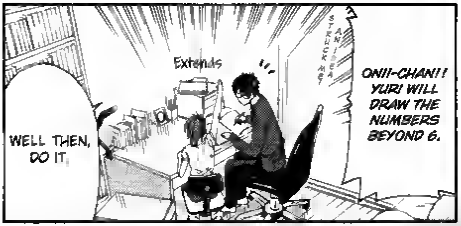
HMMM, WELL THEN LET'S TALK ABOUT GOING ROUND THE CLOCK
I THINK THIS LAST QUIZ WAS A BEAUTIFUL DISCOVERY TOO, THOUGH

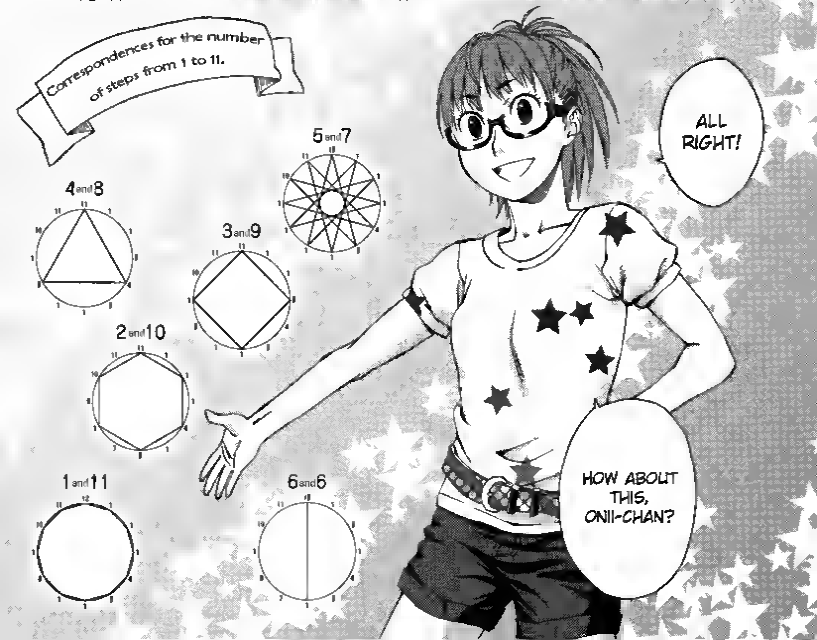

12
1
2
3
4
5
6
7
8
9
10
11
"PATROLLING THE CLOCK"
IT'S A GAME WHERE WE DRAW A CIRCLE AND TAKE A FIXED NUMBER OF STEPS AT A TIME, CONNECTING THESE PATROLLED POINTS.
LIKE THIS, FOR EXAMPLE STARTING AT 12 O'CLOCK, WE GO AROUND CONNECTING LINES AT A DISTANCE OF 2.
FROM 12 TO 2, FROM 2 TO 4... THUS,


Four steps
Three steps
Six steps
Five steps
LET'S TRY THE REST ONE BY ONE, THEN
THAT'S RIGHT, IN THIS ONE WE TAKE TWO STEPS EACH TIME
A HEXAGON!

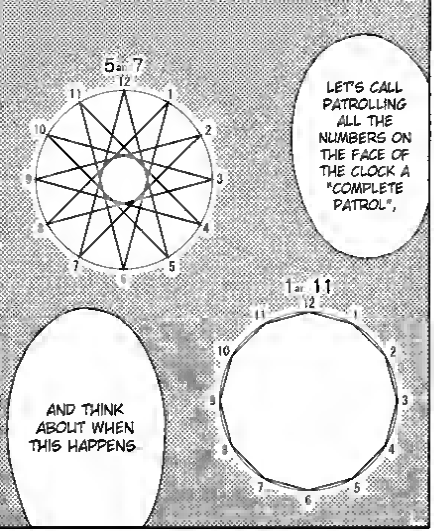
Realine
THEN 7...

IT'S A QUADRILATERAL WHEN IT'S 3. A TRIANGLE WHEN IT'S 4. WHEN IT'S 5 IT GOES AROUND ALL OF THEM AND WHEN IT'S 6 IT'S SPLIT INTO HALVES


Extends
ONII-CHAN!! YURI WILL DRAW THE NUMBERS BEYOND 6.
WELL THEN, DO IT.

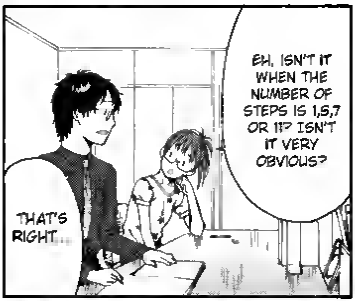

Correspondences for the number of steps from 1 to 11.
5 and 7
4 and 8
3 and 9
2 and 10
1 and 11
6 and 6
ALL RIGHT!
HOW ABOUT THIS, ONII-CHAN?

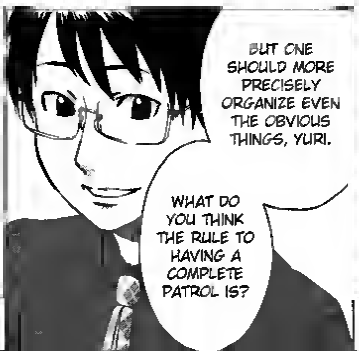
IN THIS WAY, WE MANAGED TO PUT ALL OF THEM INTO PAIRS.
HOORAY!
CORRECT.
YOU WERE ABLE TO DISCOVER IT SINCE YOU DREW IT WITH YOUR OWN HANDS.
YUP!
YES. JUST LIKE YOU, IT WAS IN MIDDLE SCHOOL WHEN I PLAYED AROUND WITH THE CLOCK.
OH~
HEY, DOES ONII-CHAN
ALWAYS DO THIS SORT OF STUFF IN THE LIBRARY?

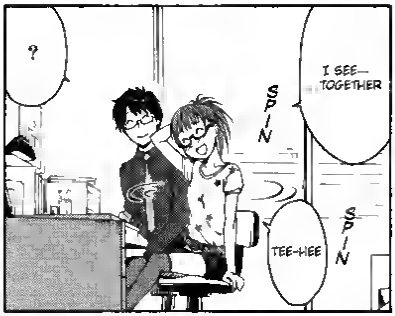

LET'S CALL PATROLLING ALL THE NUMBERS ON THE FACE OF THE CLOCK A "COMPLETE PATROL",
AND THINK ABOUT WHEN THIS HAPPENS

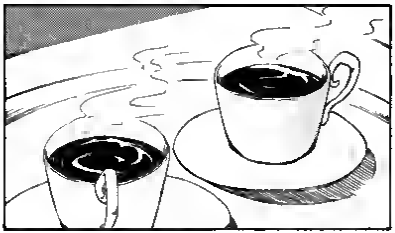
ONII-CHAN, ISN'T THERE A SECRET OR SOMETHING TO THESE FIGURES?
IT LOOKS LIKE THERE'S A RULE
MMM-HMM.

I DON'T REALLY KNOW ..
BUT HEY... THIS IS JUST...
AS IF YURI AND ONII-CHAN ARE DOING RESEARCH TOGETHER.


EH, ISN'T IT WHEN THE NUMBER OF STEPS IS 1,5,7 OR 11? ISN'T IT VERY OBVIOUS?
THAT'S RIGHT.


BUT ONE SHOULD MORE PRECISELY ORGANIZE EVEN THE OBVIOUS THINGS, YURI.
WHAT DO YOU THINK THE RULE TO HAVING A COMPLETE PATROL IS?



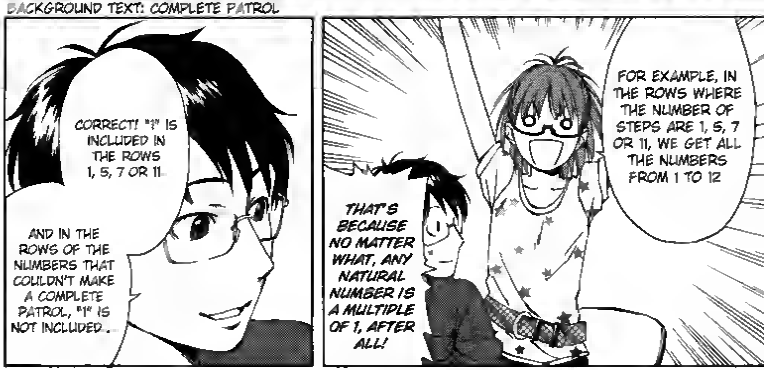


Number of steps	The numbers patrolled											
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12						
3	3	6	9	12								
4	4	8	12									
5	1	2	3	4	5	6	7	8	9	10	11	12
6	6	12										
7	1	2	3	4	5	6	7	8	9	10	11	12
8	4	8	12									
9	3	6	9	12								
10	2	4	6	8	10	12						
11	1	2	3	4	5	6	7	8	9	10	11	12

HOW SHOULD WE VIEW THIS TABLE?
NOW THEN, LET'S TRY PUTTING THE NUMBERS PATROLLED FOR EACH NUMBER OF STEPS
THE ORDER THEY'RE VISITED IN DOESN'T MATTER

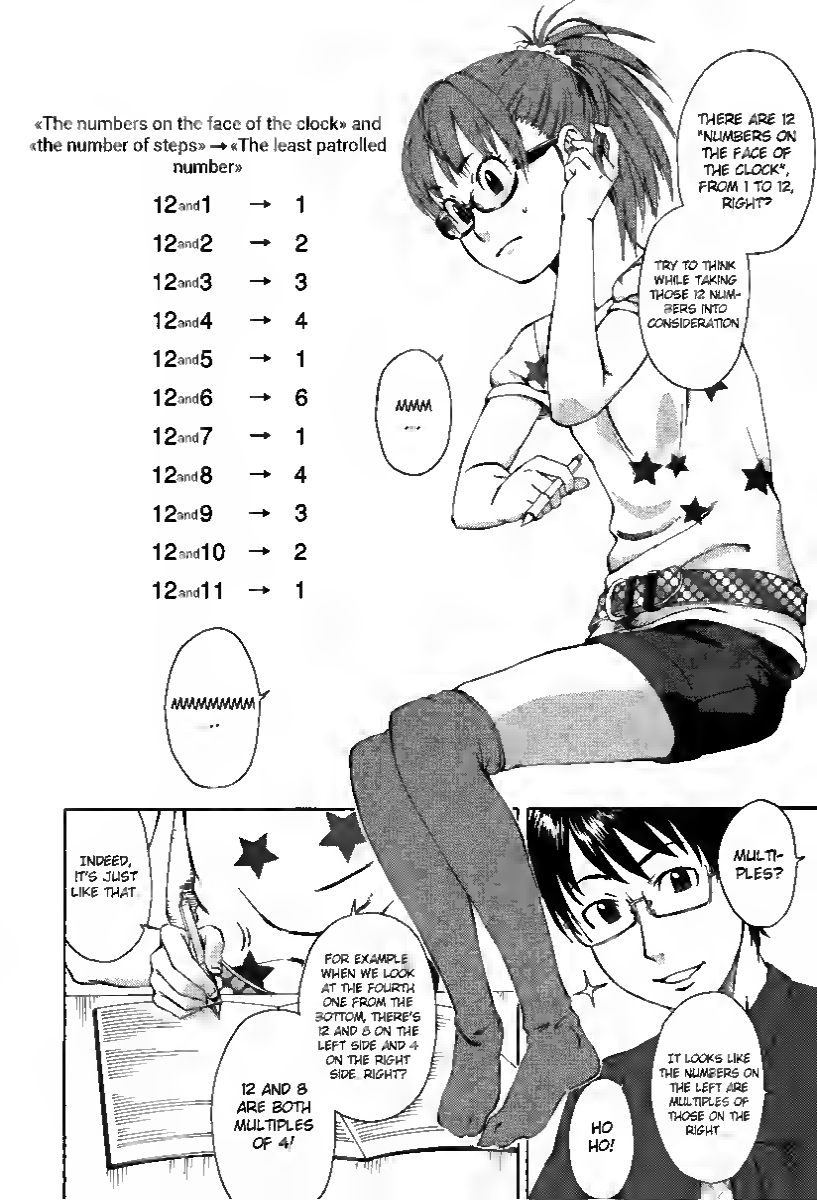
AND THOSE NUMBERS ARRANGED HORIZONTALLY ON THE RIGHT-HAND SIDE ARE
THE NUMBERS WE PATROL USING THIS NUMBER OF STEPS, ARRANGED IN ASCENDING ORDER.
UH-HUH
IN THE FIRST COLUMN ON THE LEFT
THE NUMBERS ARRANGED VERTICALLY FROM 1 TO 11 ARE THE NUMBERS OF STEPS
NOW THEN, WHEN WE LOOK AT THIS TABLE, WHAT WE REALIZE IS...
2 | 2 4 6 8 10 12
3 | 3 6 9 12
THE 2, 4, 6, 8, 10, AND 12 FROM THE SECOND ROW FROM THE TOP, WHEN THE NUMBER OF STEPS IS 2,
ARE ALL MULTIPLES OF 2
WHEN THE NUMBER OF STEPS IS 3 IN THE NEXT ROW THEY ARE ALL MULTIPLES OF 3
AH!
NOW I SEE!

BACKGROUND TEXT: COMPLETE PATROL

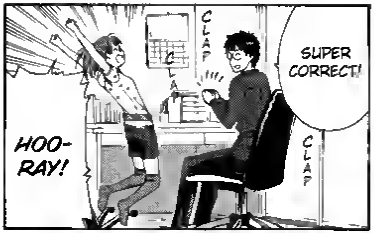

CORRECT! "1" IS INCLUDED IN THE ROWS 1, 5, 7 OR 11.
AND IN THE ROWS OF THE NUMBERS THAT COULDN'T MAKE A COMPLETE PATROL, "1" IS NOT INCLUDED.
FOR EXAMPLE, IN THE ROWS WHERE THE NUMBER OF STEPS ARE 1, 5, 7 OR 11, WE GET ALL THE NUMBERS FROM 1 TO 12.
THAT'S BECAUSE NO MATTER WHAT, ANY NATURAL NUMBER IS A MULTIPLE OF 1, AFTER ALL!

THEREFORE WE MUST DETERMINE WHAT SORT OF NUMBER
OF STEPS MEANS "1" IS INCLUDED AMONG THE NUMBERS PATROLLED
THE THING THIS PROBLEM IS SEEKING IS THE NATURE OF THE NUMBER OF STEPS
NOT YET.
YEAH! WITH THIS, WE MANAGED TO GET THE ANSWER FOR THE RULE OF A COMPLETE PATROL!

"THE SMALLEST NUMBER AMONG THE NUMBERS PATROLLED", LET'S CALL THIS
"THE LEAST PATROLLED NUMBER".
?
. WHAT DOES THAT MEAN?? ONII-CHAN
JUDGING FROM WHAT YURI DISCOVERED A WHILE AGO,
WHEN THE LEAST PATROLLED NUMBER EQUALS 1 IT'S POSSIBLE TO MAKE A COMPLETE PATROL.
THAT'S RIGHT...
WHAT THE PROBLEM ACTUALLY IS, IS WHETHER WE CAN CALCULATE THE LEAST PATROLLED NUMBER FROM THE NUMBER OF STEPS
FROM WHAT WE HAVE INVESTIGATED SO FAR,
LET'S TRY WRITING THE CORRESPONDENCE BETWEEN THE NUMBER OF STEPS AND THE LEAST PATROLLED NUMBER!

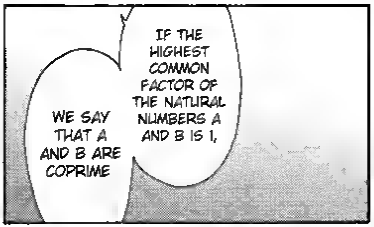

«The numbers on the face of the clock» and «the number of steps» → «The least patrolled number»
12and1 → 1
12and2 → 2
12and3 → 3
12and4 → 4
12and5 → 1
12and6 → 6
12and7 → 1
12and8 → 4
12and9 → 3
12and10 → 2
12and11 → 1
THERE ARE 12 "NUMBERS ON THE FACE OF THE CLOCK", FROM 1 TO 12, RIGHT?
TRY TO THINK WHILE TAKING THOSE 12 NUMBERS INTO CONSIDERATION
MMM...
MMMMMMM...
MULTIPLES?
IT LOOKS LIKE THE NUMBERS ON THE LEFT ARE MULTIPLES OF THOSE ON THE RIGHT
HO HO!
INDEED, IT'S JUST LIKE THAT
FOR EXAMPLE WHEN WE LOOK AT THE FOURTH ONE FROM THE BOTTOM, THERE'S 12 AND 8 ON THE LEFT SIDE AND 4 ON THE RIGHT SIDE. RIGHT?
12 AND 8 ARE BOTH MULTIPLES OF 4!

AH! WE DID THIS AT SCHOOL!
THE LEAST REACHED NUMBER ON THE RIGHT SIDE IS A FACTOR OF THE TWO NUMBERS ON THE LEFT SIDE...
IT'S A FACTOR OF BOTH OF THEM, SO IT'S A COMMON FACTOR!
12 AND THE NUMBER OF STEPS — THE NUMBER OF NUMBERS ON THE FACE OF THE CLOCK AND THE NUMBER OF STEPS' COMMON FACTOR IS
THE LEAST PATROLLED NUMBER!
BUT THERE'S A LITTLE FURTHER TO GO!
CLICK
IT'S NOT JUST A NORMAL COMMON FACTOR...
OH!
E—...
Ah!
SO, ONCE MORE, WHEN IS IT POSSIBLE TO PERFORM A COMPLETE CYCLE OF THE CLOCK?


CLAP
CLAP
SUPER CORRECT!
CLAP
HOO-RAY!

THE RULE OF A COMPLETE PATROL
TO PUT IT SIMPLY, IT IS THAT A COMPLETE PATROL CAN HAPPEN WHEN THEY ARE "COPRIME".

CO .. PRIME? WHAT DOES THAT MEAN?
IT MEANS THAT THEIR HIGHEST COMMON FACTOR IS 1.


IF THE HIGHEST COMMON FACTOR OF THE NATURAL NUMBERS A AND B IS 1,
WE SAY THAT A AND B ARE COPRIME

WHEN THE HIGHEST COMMON FACTOR IS 1!
WHEN THE HIGHEST COMMON FACTOR OF THE NUMBER OF NUMBERS ON THE FACE OF THE CLOCK AND THE NUMBER OF STEPS IS 1, A COMPLETE PATROL CAN BE PERFORMED!!

A COMPLETE PATROL OF THE CLOCK IS POSSIBLE ONLY WHEN THE NUMBER OF NUMBERS ON THE FACE OF THE CLOCK AND THE NUMBER OF STEPS ARE COPRIME!
USING THE EXPRESSION "COPRIME", WE CAN EXPRESS A COMPLETE CYCLE LIKE THIS ——
FOR EXAMPLE, THE HIGHEST COMMON FACTOR OF 12 AND 7 IS 1,
THEREFORE 12 AND 7 ARE COPRIME. ON THE OTHER HAND, THE HIGHEST COMMON FACTOR OF 12 AND 8 IS 4,
THEREFORE, 12 AND 8 ARE NOT COPRIME

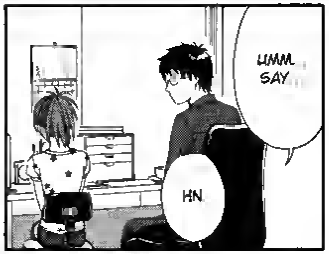
YURI IS ADMIRABLE.
SINCE YOU ALWAYS CHECK "WHAT DOES THAT MEAN?"
COPRIME... HUH

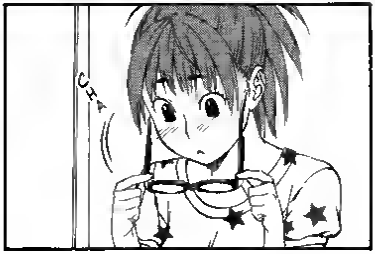
IDIOTS ARE THOSE WHO, DESPITE NOT UNDERSTANDING, PRETEND TO UNDERSTAND.
YURI IS NOT AN IDIOT.
BUT IT'S BECAUSE YURI IS AN IDIOT, SO THERE ARE SO MANY THINGS THAT SHE DOESN'T UNDERSTAND.
SA—N
SA—N
NYAHA-HA...
ONII-CHAN IS THE ONLY ONE WHO WOULD PRAISE ME EVEN THOUGH I SAID I DON'T UNDERSTAND
EHEHEHE
BUT,
PWAISED?
Wa
ALSO LOVE
GETTING PWAISED MAKES ME HAPPY, NYAA.
IT'S FINE!
IT'S BECAUSE I FELT EMBARRASSED. DON'T REACT!

I BELIEVE IT IS SPLENDID MATHEMATICS
BUT, YOU KNOW..
DRAWING A CLOCK, GOING ROUND AND ROUND MAKING A TABLE.
HEY, ONII-CHAN, IS THIS PATROLLING THE CLOCK ALSO CONSIDERED MATHEMATICS?
THAT'S AMUSING, JUST LIKE A GAME.
HEY, IS THIS REALLY CONSIDERED MATHEMATICS?
WHAT IS MATHEMATICS?
"WHAT IS MATHEMATICS" ——— IS SOMETHING THAT CAN'T BE DESCRIBED IN FEW WORDS.
HOWEVER, INVESTIGATING THE NATURE OF NUMBERS IS AN IMPORTANT ACTIVITY IN MATHEMATICS
THAT'S THE FIELD OF NUMBER THEORY.
HOW ABOUT A STORY LIKE THIS———

IF WE HAVE 12 THEN IT'S POSSIBLE TO DRAW FIGURES AND CHECK LIKE WHAT WE DID NOW
THE NUMBER OF NUMBERS ON THE FACE OF THE CLOCK IS USUALLY 12, RIGHT?
...TO THINK ABOUT THIS...
WHAT SHOULD THE NUMBER OF STEPS BE TO MAKE A COMPLETE PATROL?
BUT, IF THERE WERE 100 NUMBERS, THEN WHAT ABOUT THAT?
YEAH, IT CAN'T BE PRACTICALLY TESTED OUT.
IF THERE'S THAT MANY, WE CAN'T TRY IT OUT, DON'T YOU THINK?
IF THERE WERE 1000 NUMBERS, IF THERE WERE 100000000 NUMBERS...
WE WILL BE ABLE TO KNOW!
—HOWEVER, IF WE ONLY NEED TO GET THE HIGHEST COMMON FACTOR BETWEEN THE NUMBER OF NUMBERS AND THE NUMBER OF STEPS,
WE CAN TELL WHETHER IT WILL BE ABLE TO PATROL THE WHOLE THING OR NOT

THAT'S THE POWER OF MATHEMATICS!
IF WE SEE THROUGH THE LAWS OF NUMBERS THAT ARE HIDDEN WITHIN THE PROBLEMS
WE WILL BE ABLE TO FORESEE THE FUTURE AND THE END OF WORLDS WHERE WE OURSELVES ARE NOT ABLE TO GO
SEE THROUGH
THE LAWS..
THAT'S THE FUN OF MATHEMATICS
MATHEMATICS CAN EVEN DEAL WITH THE INFINITE.
WE MAY SET THE INFINITE ETERNITY OF TIME INTO A FOLDABLE ENVELOPE.
WE MAY ALSO SET AN INFINITE UNIVERSE IN THE PALM OF YOUR HAND AND LET IT SING

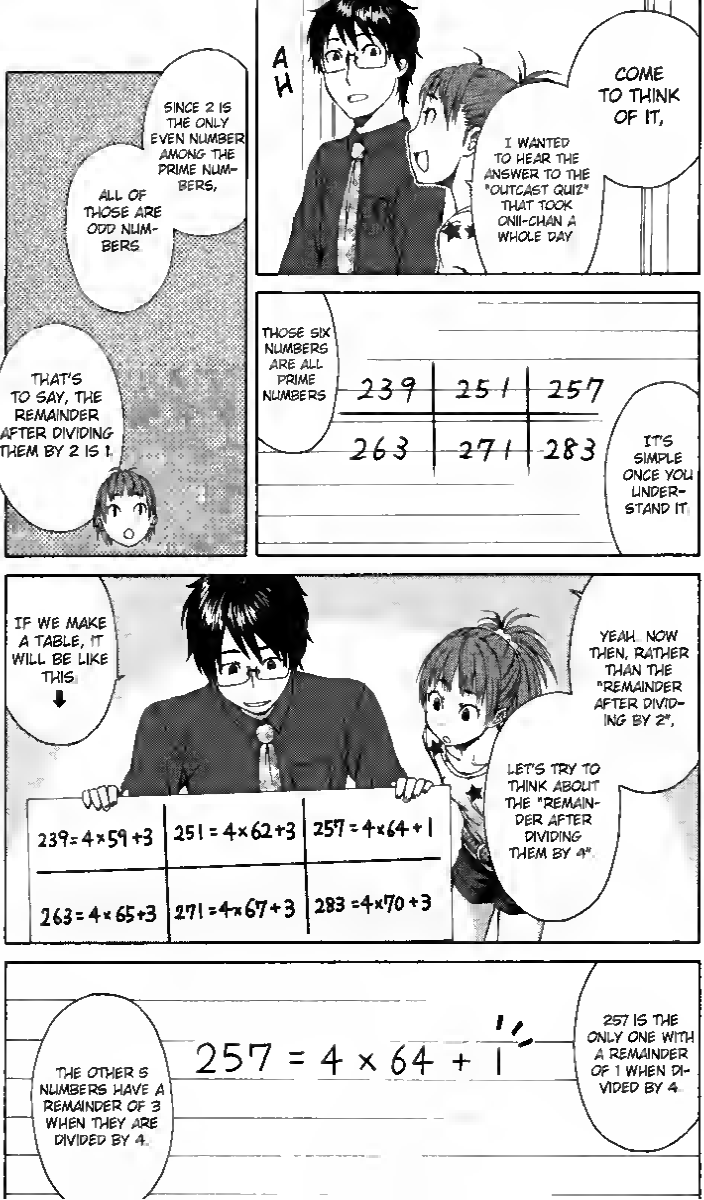

UMM, SAY...
HN.


UTA

SMILE
YOU'RE RIGHT!
YEAH.

?
...THAT'S NOT TRUE.

IS IT STRANGE TO CALL YOU "ONII-CHAN" EVEN THOUGH WE ARE COUSINS?
I WONDER IF IT'S CHILDISH...


AH
COME TO THINK OF IT,
I WANTED TO HEAR THE ANSWER TO THE "OUTCAST QUIZ" THAT TOOK ONII-CHAN A WHOLE DAY
SINCE 2 IS THE ONLY EVEN NUMBER AMONG THE PRIME NUMBERS,
ALL OF THOSE ARE ODD NUMBERS
THAT'S TO SAY, THE REMAINDER AFTER DIVIDING THEM BY 2 IS 1.
THOSE SIX NUMBERS ARE ALL PRIME NUMBERS
239 | 251 | 257
263 | 271 | 283
IT'S SIMPLE ONCE YOU UNDERSTAND IT.
IF WE MAKE A TABLE, IT WILL BE LIKE THIS.
239=4×59+3 | 251=4×62+3 | 257=4×64+1
263=4×65+3 | 271=4×67+3 | 283=4×70+3
YEAH. NOW THEN, RATHER THAN THE "REMAINDER AFTER DIVIDING BY 2", LET'S TRY TO THINK ABOUT THE "REMAINDER AFTER DIVIDING THEM BY 4".
257 = 4 × 64 + 1
THE OTHER 5 NUMBERS HAVE A REMAINDER OF 3 WHEN THEY ARE DIVIDED BY 4.
257 IS THE ONLY ONE WITH A REMAINDER OF 1 WHEN DIVIDED BY 4.

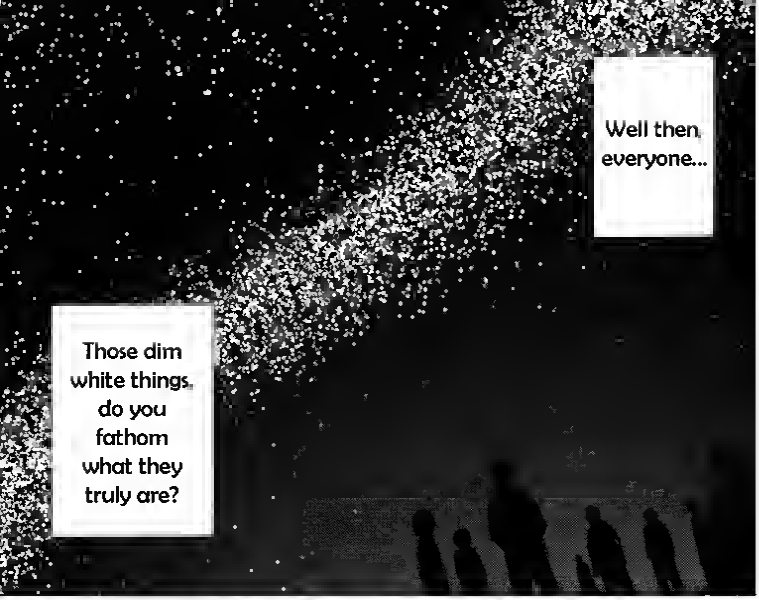
WHEN WE HAVE NATURAL NUMBERS WE IMMEDIATELY THINK WHETHER IT'S "EVEN OR ODD"
WE DIVIDE BY 2 AND CATEGORIZE ACCORDING TO THE REMAINDER
IF IT'S AN EVEN NUMBER, THE REMAINDER IS 0. AND IF IT'S AN ODD NUMBER, THE REMAINDER IS 1

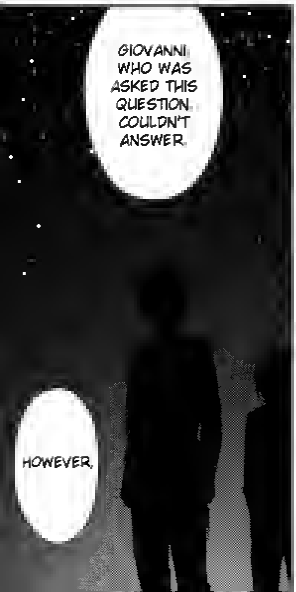
BUT, HEY... ONII-CHAN...
YOU DON'T NORMALLY NOTICE SOMETHING LIKE THAT! ISN'T THIS A LITTLE FARFETCHED?
IS "DIVIDING BY 4" SUCH AN IMPORTANT THING?

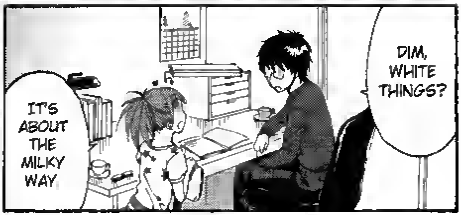
CATEGORIZING BY THE REMAINDER OF DIVISION BY 4
IS REALLY VERY MUCH LIKE THIS.
SINCE THE REMAINDER AFTER DIVIDING AN ODD NUMBER BY 4
IS EITHER 1 OR 3.

FOR ME...
TO NOTICE THE THING CALLED "CATEGORIZING BY THE REMAINDER AFTER DIVISION BY 4" TOOK ME A WHOLE DAY.
THUS I WAS EXTREMELY FRUSTRATED..

ONII-CHAN'S STORIES ARE SORT OF INTERESTING
YOU ALWAYS TELL YURI THE STUFF SHE WANTS TO KNOW..
ONII-CHAN
REALLY LOVES MATHEMATICS.
HAVING SOMEONE TELL YOU IS IMPORTANT, BUT
THINKING FOR YOURSELF IS IMPORTANT TOO.
"ARE THE THINGS WE TAKE FOR GRANTED ACTUALLY REAL?" THE SENSE OF ASCERTAINING THINGS LIKE THIS IS NECESSARY.
JUST LIKE GIOVANNI'S SENSEI
HE WAS IN AN OLD ANIME PAPA HAD.
HE SAYS THINGS LIKE THIS
GIOVANNI?


Well then, everyone...
Those dim white things, do you fathom what they truly are?


GIOVANNI WHO WAS ASKED THIS QUESTION, COULDN'T ANSWER.
HOWEVER,


DIM, WHITE THINGS?
IT'S ABOUT THE MILKY WAY.

THE MILKY WAY IS A GATHERING OF SMALL STARS, YOU KNOW...
THE SENSEI WANTS TO SAY "SEE ITS TRUE FORM."

IS THIS MIYAZAWA KENJI?
YES, EXACTLY IT'S "NIGHT ON THE GALACTIC RAILROAD".
THE TRUTH IS THAT THE SENSEI DIDN'T TRULY KNOW THE MILKY WAY'S TRUE FORM EITHER.
AFTER THIS
GIOVANNI RODE THE GALACTIC RAILWAY AND EXPERIENCED THE MILKY WAY HIMSELF...
DO YOU FATHOM WHAT THEY REALLY ARE...
WHAT A NICE QUESTION
IT'S THE APPROACH OF INQUIRING ABOUT THE "TRUE FORM"...

The "true form" of
the dim white things.
The "true form" of
what we call
numbers.
The "true form"
of our selves.

KIDS! THE FOOD IS READY—
COM—ING
——Do you fathom what they truly are——

The highest common factor.

We will think about the number "12". The numbers that divide 12 without remainder are 1, 2, 3, 4, 6 and 12, right? We call these the "factors" of 12.

Again, the numbers that divide 8 without remainder are 1, 2, 4 and 8. Which means the factors of 8 are 1, 2, 4 and 8.

Well now, what could be the numbers that divide both 12 and 8 without remainder? Since these are in the intersection of the factors of 12 with the factors of 8, they will be 1, 2 and 4. We call 1, 2 and 4 the "common factors" of 12 and 8.

We call the highest number among the common factors "the highest common factor". The highest common factor of 12 and 8 is 4.

Yuri has challenged the problem of patrolling the clock and discovered the rule which states that "when the highest common factor of the number of numbers on the face of the clock and the number of steps is 1, then a complete patrol happens."

Since the highest common factor with 12 is 1 only for these four pairs: 12 and 1, 12 and 5, 12 and 7 and 12 and 11, the only numbers that lead to a complete patrol are 1,5,7 and 11.

In a quiz where we go round and round around the clock, mathematics is also present.